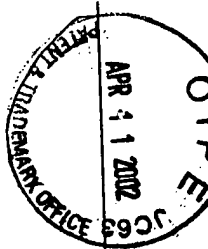
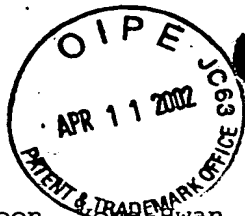


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**DISK TO STIC**

**DATE:**





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# SEQUENCE LISTING

<110> Moon, Jong Hwan  
Chen, Lingjing  
Sung, Zinmay R.

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| gca aag cag aat ggc aca agt gat ggt tgc tcc atc aca ttt gtt cgg | 672  |
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| aaa aag gtg cgg ctt cta tca gaa att ata aat gct aac cag gtt gag | 1392 |
| Lys Lys Val Arg Leu Leu Ser Glu Ile Ile Asn Ala Asn Gln Val Glu |      |
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| aca ccc act gcg agt act cag cat gat gat gag aat gat act gaa aat | 1728 |
| Thr Pro Thr Ala Ser Thr Gln His Asp Asp Glu Asn Asp Thr Glu Asn |      |
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| aaa cag acc atg ata gat gac atc ccc atg gat att gtt gaa ctg cta | 2112 |
| Lys Gln Thr Met Ile Asp Asp Ile Pro Met Asp Ile Val Glu Leu Leu |      |
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| Asp Ile Asn Arg Ile Gln Ser Lys Thr Thr Ala Asp Asp Asp Cys Val |      |
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| Gln Pro Val Ile Ala Pro Leu Asp Arg Tyr Ala Glu Arg Ala Val Asn |      |
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| Leu Arg Pro His Pro Arg Val Gly Val Leu Gly Ser Leu Leu Gln Lys |      |
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Arg

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Ser Val Gln Glu Gly Asn Asp Ser Lys Cys Asn Ala Pro Ser Gly Lys  
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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
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| Gly | Pro | Ala | Gln | Asn | Tyr | Asp | Val | Ala | Ala | Asn | Val | Ser | Glu | Asp | Asn |  |  |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |  |  |
| Thr | Ser | Val | Asp | Val | Gly | Ala | Leu | Pro | Glu | Val | Pro | Gln | Ile | Thr | Trp |  |  |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |  |  |
| His | Ile | Glu | Val | Asn | Gly | Ala | Asp | Gln | Pro | Pro | Ser | Thr | Pro | Lys | Leu |  |  |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |  |  |
| Ser | Glu | Val | Val | Leu | Lys | Arg | Asn | Glu | Asp | Glu | Asn | Gly | Lys | Thr | Glu |  |  |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |  |  |
| Glu | Thr | Leu | Val | Ala | Glu | Gln | Cys | Asn | Leu | Thr | Lys | Asp | Pro | Asn | Pro |  |  |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |  |  |
| Met | Ser | Gly | Lys | Glu | Arg | Asp | Gln | Val | Ala | Glu | Gln | Cys | Asn | Leu | Thr |  |  |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |  |  |
| Lys | Asp | Pro | Lys | Pro | Val | Ser | Gly | Gln | Lys | Cys | Glu | Gln | Ile | Cys | Asn |  |  |
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| Glu | Pro | Cys | Glu | Glu | Val | Val | Leu | Lys | Arg | Ser | Ser | Lys | Ser | Lys | Arg |  |  |
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| Lys | Thr | Asp | Lys | Lys | Leu | Met | Lys | Lys | Gln | Gln | His | Ser | Lys | Lys | Arg |  |  |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |  |  |
| Thr | Ala | Gln | Ala | Asp | Val | Ser | Asp | Ala | Lys | Leu | Cys | Arg | Arg | Lys | Pro |  |  |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |  |  |
| Lys | Lys | Val | Arg | Leu | Leu | Ser | Glu | Ile | Ile | Asn | Ala | Asn | Gln | Val | Glu |  |  |
|     | 370 |     |     |     |     | 375 |     |     |     | 380 |     |     |     |     |     |  |  |
| Asp | Ser | Arg | Ser | Asp | Glu | Val | His | Arg | Glu | Asn | Ala | Ala | Asp | Pro | Cys |  |  |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |  |  |
| Glu | Asp | Asp | Arg | Ser | Thr | Ile | Pro | Val | Pro | Met | Glu | Val | Ser | Met | Asp |  |  |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |  |  |
| Ile | Pro | Val | Ser | Asn | His | Thr | Val | Gly | Glu | Asp | Gly | Leu | Lys | Ser | Ser |  |  |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |  |  |
| Lys | Asn | Lys | Thr | Lys | Arg | Lys | Tyr | Ser | Asp | Val | Val | Asp | Asp | Gly | Ser |  |  |
|     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |  |  |
| Ser | Leu | Met | Asn | Trp | Leu | Asn | Gly | Lys | Lys | Lys | Arg | Thr | Gly | Ser | Val |  |  |
|     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |  |  |
| His | His | Thr | Val | Ala | His | Pro | Ala | Gly | Asn | Leu | Ser | Asn | Lys | Lys | Val |  |  |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |  |  |
| Thr | Pro | Thr | Ala | Ser | Thr | Gln | His | Asp | Asp | Glu | Asn | Asp | Thr | Glu | Asn |  |  |
|     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |  |  |
| Gly | Leu | Asp | Thr | Asn | Met | His | Lys | Thr | Asp | Val | Cys | Gln | His | Val | Ser |  |  |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |  |  |



|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Ile | Ser | Thr | Gln | Arg | Cys | Ser | Ser | Lys | Gly | Lys | Thr | Ala | Gly | Leu | 515 | 520 | 525 |
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| Cys | Gln | Met | Glu | Thr | Glu | Asn | Ser | Val | Leu | Ser | His | Ser | Ala | Lys | Val | 565 | 570 | 575 |
| Ser | Pro | Ala | Glu | His | Asp | Ile | Gln | Ile | Met | Ser | Asp | Leu | His | Glu | Gln | 580 | 585 | 590 |
| Ser | Leu | Pro | Lys | Lys | Lys | Lys | Lys | Gln | Lys | Leu | Glu | Val | Thr | Arg | Glu | 595 | 600 | 605 |
| Lys | Gln | Thr | Met | Ile | Asp | Asp | Ile | Pro | Met | Asp | Ile | Val | Glu | Leu | Leu | 610 | 615 | 620 |
| Ala | Lys | Asn | Gln | His | Glu | Arg | Gln | Leu | Met | Thr | Glu | Thr | Asp | Cys | Ser | 625 | 630 | 635 |
| Asp | Ile | Asn | Arg | Ile | Gln | Ser | Lys | Thr | Thr | Ala | Asp | Asp | Asp | Cys | Val | 645 | 650 | 655 |
| Ile | Val | Ala | Ala | Lys | Asp | Gly | Ser | Asp | Tyr | Ala | Ser | Ser | Val | Phe | Asp | 660 | 665 | 670 |
| Thr | Asn | Ser | Gln | Gln | Lys | Ser | Leu | Ala | Ser | Gln | Ser | Thr | Gln | Lys | Glu | 675 | 680 | 685 |
| Leu | Gln | Gly | His | Leu | Ala | Leu | Thr | Thr | Gln | Glu | Ser | Pro | His | Pro | Gln | 690 | 695 | 700 |
| Asn | Phe | Gln | Ser | Thr | Gln | Glu | Gln | Gln | Thr | His | Leu | Arg | Met | Glu | Glu | 705 | 710 | 715 |
| Met | Val | Thr | Ile | Ala | Ala | Ser | Ser | Pro | Leu | Phe | Ser | His | His | Asp | Asp | 725 | 730 | 735 |
| Gln | Tyr | Ile | Ala | Glu | Ala | Pro | Thr | Glu | His | Trp | Gly | Arg | Lys | Asp | Ala | 740 | 745 | 750 |
| Lys | Lys | Leu | Thr | Trp | Glu | Gln | Phe | Lys | Ala | Thr | Thr | Arg | Asn | Ser | Pro | 755 | 760 | 765 |
| Ala | Ala | Thr | Cys | Gly | Ala | Gln | Phe | Arg | Pro | Gly | Ile | Gln | Ala | Val | Asp | 770 | 775 | 780 |
| Leu | Thr | Ser | Thr | His | Val | Met | Gly | Ser | Ser | Ser | Asn | Tyr | Ala | Ser | Arg | 785 | 790 | 795 |
| Gln | Pro | Val | Ile | Ala | Pro | Leu | Asp | Arg | Tyr | Ala | Glu | Arg | Ala | Val | Asn | 805 | 810 | 815 |
| Gln | Val | His | Ala | Arg | Asn | Phe | Pro | Ser | Thr | Ile | Ala | Thr | Met | Glu | Ala | 820 | 825 | 830 |

Ser Lys Leu Cys Asp Arg Arg Asn Ala Gly Gln Val Val Leu Tyr Pro  
 835 840 845  
 Lys Glu Ser Met Pro Ala Thr His Leu Leu Arg Met Met Asp Pro Ser  
 850 855 860  
 Thr Leu Ala Ser Phe Pro Asn Tyr Gly Thr Ser Ser Arg Asn Gln Met  
 865 870 875 880  
 Glu Ser Gln Leu His Asn Ser Gln Tyr Ala His Asn Gln Tyr Lys Gly  
 885 890 895  
 Ser Thr Ser Thr Ser Tyr Gly Ser Asn Leu Asn Gly Lys Ile Pro Leu  
 900 905 910  
 Thr Phe Glu Asp Leu Ser Arg His Gln Leu His Asp Leu His Arg Pro  
 915 920 925  
 Leu Arg Pro His Pro Arg Val Gly Val Leu Gly Ser Leu Leu Gln Lys  
 930 935 940  
 Glu Ile Ala Asn Trp Ser Glu Asn Cys Gly Thr Gln Ser Gly Tyr Lys  
 945 950 955 960  
 Leu Gly Val Ser Thr Gly Ile Thr Ser His Gln Met Asn Arg Lys Glu  
 965 970 975  
 His Phe Glu Ala Leu Asn Ser Gly Met Phe Ser Ala Lys Trp Asn Ala  
 980 985 990  
 Leu Gln Leu Gly Ser Val Ser Ser Ser Ala Asp Phe Leu Ser Ala Arg  
 995 1000 1005  
 Asn Ser Ile Ala Gln Ser Trp Thr Arg Gly Lys Gly Lys Met Val His  
 1010 1015 1020  
 Pro Leu Asp Arg Phe Val Arg Gln Asp Ile Cys Ile Thr Asn Lys Asn  
 1025 1030 1035 1040  
 Pro Ala Asp Phe Thr Thr Ile Ser Asn Asp Asn Glu Tyr Met Asp Tyr  
 1045 1050 1055

Arg